



# Volunteer Lake Assessment Program Individual Lake Reports

## PLEASANT LAKE, DEERFIELD, NH

### MORPHOMETRIC DATA

|                       |       |                           |            |                                   |      |
|-----------------------|-------|---------------------------|------------|-----------------------------------|------|
| Watershed Area (Ac.): | 2,240 | Max. Depth (m):           | 19.8       | Flushing Rate (yr <sup>-1</sup> ) | 0.4  |
| Surface Area (Ac.):   | 493   | Mean Depth (m):           | 7          | P Retention Coef:                 | 0.78 |
| Shore Length (m):     | 7,200 | Volume (m <sup>3</sup> ): | 13,995,000 | Elevation (ft):                   | 578  |

### TROPHIC CLASSIFICATION

| Year | Trophic class |
|------|---------------|
| 1982 | OLIGOTROPHIC  |
| 1996 | OLIGOTROPHIC  |

### KNOWN EXOTIC SPECIES

|  |
|--|
|  |
|  |
|  |

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

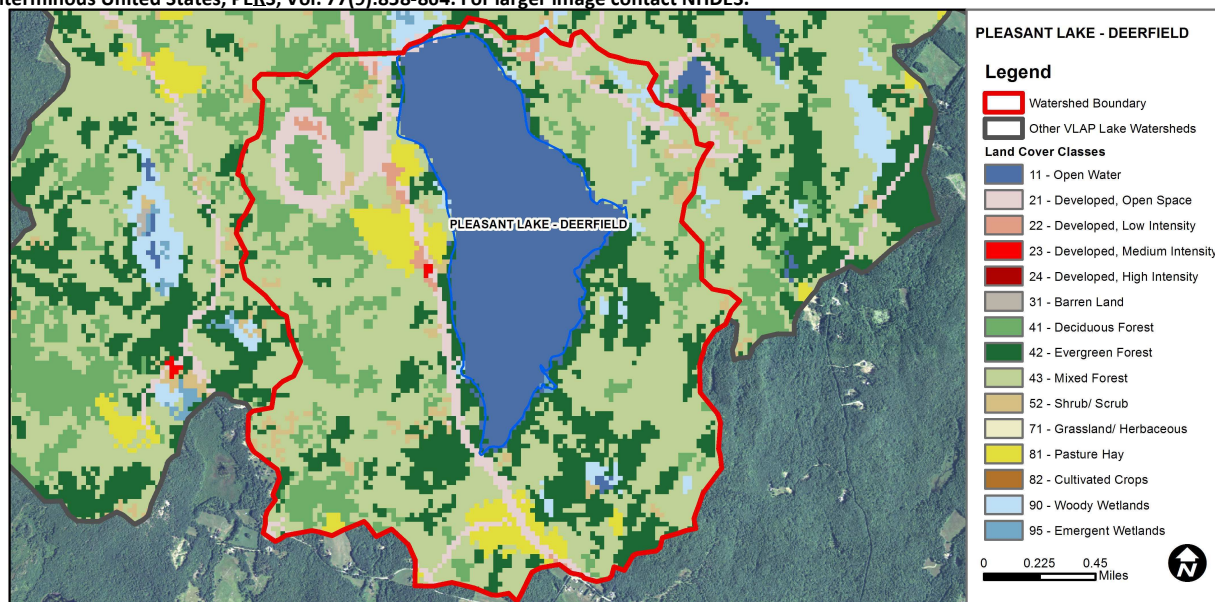
| Designated Use             | Parameter          | Category     | Comments  |
|----------------------------|--------------------|--------------|---|
| Aquatic Life               | Phosphorus (Total) | Good         | >=5 samples and median is < threshold but > 1/2 threshold value.                                  |
|                            | pH                 | Bad          | >10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.             |
|                            | D.O. (mg/L)        | Bad          | >10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.             |
|                            | D.O. (% sat)       | Slightly Bad | >10% of samples exceed criteria by a small margin (minimum of 2 exceedances).                     |
|                            | Chlorophyll-a      | Good         | >=5 samples and median is < threshold but > 1/2 threshold value.                                  |
| Primary Contact Recreation | E. coli            | Good         | Geometric means < criteria; however at least 1 exceedance of the single sample criteria occurred. |
|                            | Chlorophyll-a      | Very Good    | At least 10 samples with 0 exceedances of criteria.   |

### BEACH PRIMARY CONTACT ASSESSMENT STATUS

|                                   |         |     |   |
|-----------------------------------|---------|-----|---|
| PLEASANT LAKE - VEASEY PARK BEACH | E. coli | Bad | >=1 exceedance(s) of geometric mean criterion and/or >=2 exceedances of single sample criterion, with 1 or more >2X criteria. |
|-----------------------------------|---------|-----|---|

### WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



| Land Cover Category        | % Cover | Land Cover Category | % Cover | Land Cover Category  | % Cover |
|----------------------------|---------|---------------------|---------|----------------------|---------|
| Open Water                 | 20.9    | Barren Land         | 0       | Grassland/Herbaceous | 0       |
| Developed-Open Space       | 5.72    | Deciduous Forest    | 9.74    | Pasture Hay          | 3.79    |
| Developed-Low Intensity    | 0.73    | Evergreen Forest    | 14.84   | Cultivated Crops     | 0       |
| Developed-Medium Intensity | 0.05    | Mixed Forest        | 40.54   | Woody Wetlands       | 1.49    |
| Developed-High Intensity   | 0       | Shrub-Scrub         | 1.86    | Emergent Wetlands    | 0.06    |



# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

## PLEASANT LAKE, DEERFIELD, NH

### 2012 DATA SUMMARY

#### OBSERVATIONS AND RECOMMENDATIONS (Refer to Table 1 and Historical Deep Spot Data Graphic)

- ♣ **CHLOROPHYLL-A:** Chlorophyll levels were slightly higher in September however below the NH lake median. Historical trend analysis indicates a relatively stable chlorophyll level since monitoring began.
- ♣ **CONDUCTIVITY/CHLORIDE:** Conductivity was much greater than the NH lake median in Branch Brook, Farrelly Brook and Veasey Brook. Deep spot conductivity was slightly greater than the NH lake median.
- ♣ **TOTAL PHOSPHORUS:** Epilimnetic (upper water layer) phosphorus was low and well below NH lake median. Historical trend analysis indicates a relatively stable phosphorus level since monitoring began. Hypolimnetic (lower water layer) phosphorus was slightly elevated in September and the turbidity was also elevated indicating potential sediment contamination. Clarks Bk. and Loon Cove phosphorus was elevated in June following a storm event.
- ♣ **TRANSPARENCY:** Transparency decreased as the summer progressed however was above the NH lake median. Historical trend analysis indicates a relatively stable transparency since monitoring began.
- ♣ **TURBIDITY:** Turbidity was elevated in Branch Bk., Clarks Bk. and Loon Cove in June following a significant storm event. Hypolimnetic turbidity was slightly elevated in September indicating potential sediment contamination.
- ♣ **pH:** pH levels were lower than desirable and potentially critical to aquatic life.
- ♣ **RECOMMENDED ACTIONS:** Phosphorus and turbidity were elevated in Branch Bk., Clarks Bk. and Loon Cove following a storm event indicating potential erosion and stormwater runoff issues in the subwatersheds. Identify potential areas impacted by stormwater and implement best management practices to reduce runoff where possible. Educate watershed residents on ways to reduce stormwater runoff from their properties utilizing DES' "NH Homeowner's Guide to Stormwater Management". Conduct chloride monitoring at tributaries with elevated conductivity to establish a baseline data set. Keep up the great work!

| Station Name     | Table 1. 2012 Average Water Quality Data for PLEASANT LAKE |         |       |         |        |      |       |
|------------------|--|---------|-------|---------|--------|------|-------|
|                  | Alk.   | Chlor-a | Cond. | Total P | Trans. |      | Turb. |
|                  | mg/l   | ug/l    | uS/cm | ug/l    | NVS    | VS   | ntu   |
| Branch Brook     |  |         | 181.2 | 16      |        |      | 3.25  |
| Clarks Brook     |  |         | 35.7  | 35      |        |      | 3.47  |
| Deep Epilimnion  | 2.43   | 3.24    | 66.1  | 6       | 6.82   | 7.08 | 0.70  |
| Deep Metalimnion |  |         | 65.6  | 7       |        |      | 0.94  |
| Deep Hypolimnion |  |         | 70.7  | 14      |        |      | 1.64  |
| Farrelly Brook   |  |         | 257.0 | 7       |        |      | 0.50  |
| Loon Cove        |  |         | 63.7  | 35      |        |      | 2.18  |
| Philbrick Brook  |  |         | 16.4  | 7       |        |      | 0.24  |
| Route 107 Inlet  |  |         | 49.7  | 12      |        |      | 1.27  |
| Veasey Brook     |  |         | 221.0 | 11      |        |      | 0.63  |
| Wilsons Brook    |  |         | 59.8  | 8       |        |      | 0.41  |

**NH Median Values:** Median values for specific parameters generated from historic lake monitoring data.

**Alkalinity:** 4.9 mg/L

**Chlorophyll-a:** 4.58 mg/m<sup>3</sup>

**Conductivity:** 40.0 uS/cm

**Chloride:** 4 mg/L

**Total Phosphorus:** 12 ug/L

**Transparency:** 3.2 m

**pH:** 6.6

**NH Water Quality Standards:** Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

**Chloride:** < 230 mg/L (chronic)

**E. coli:** > 88 cts/100 mL – public beach

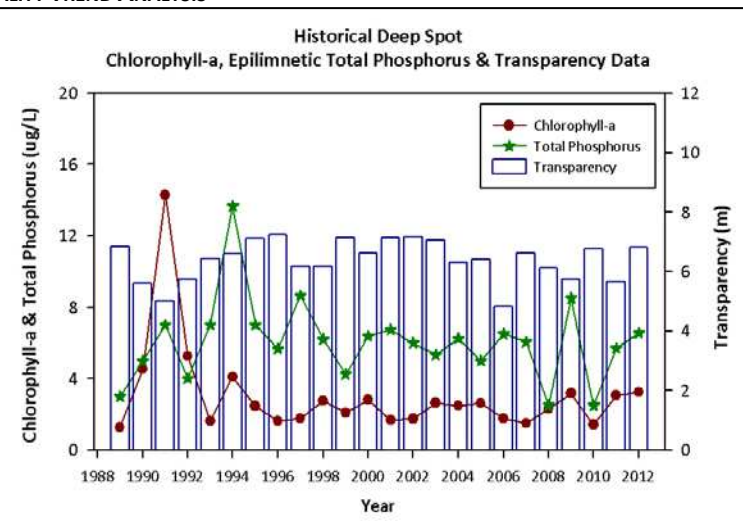
**E. coli:** > 406 cts/100 mL – surface waters

**Turbidity:** > 10 NTU above natural level

**pH:** 6.5-8.0 (unless naturally occurring)

#### HISTORICAL WATER QUALITY TREND ANALYSIS

| Parameter               | Trend  | Explanation                                      |
|-------------------------|--------|--|
| Chlorophyll-a           | Stable | Data not significantly increasing or decreasing. |
| Transparency            | Stable | Data not significantly increasing or decreasing. |
| Phosphorus (epilimnion) | Stable | Data not significantly increasing or decreasing. |



This report was generated by the NH DES Volunteer Lake Assessment Program (VLAP). For more information contact:

Sara Steiner  
PO Box 95  
Concord, NH 03302-0095  
(603) 271-2658  
sara.steiner@des.nh.gov

